

REMARKS

This is in response to the Official Action currently outstanding with regard to the above-identified application, which Official Action the Examiner has designated as being FINAL.

Claims 1, 3-13 and 15-22 were pending in this application at the time of the issuance of the currently outstanding Official Action. By the foregoing Amendment, Claims 1, 10 and 21 have been amended so as to include the subject matter of Claims 7 and 19. Claims 7 and 19, in turn, have been canceled, without prejudice. No claims have been either added or withdrawn. Accordingly, in the event that the Examiner grants entry to the foregoing amendment, Claims 1, 3-6, 8-13, 15-18 and 20-22 as amended above will constitute the Claims under active prosecution in this application.

The Claims of this application as they will stand in the event that the Examiner grants entry to the foregoing Amendment are set forth above including appropriate status identifiers and indications of the amendments made as required by the Rules.

More particularly, in the currently outstanding FINAL Official Action the Examiner has:

1. Acknowledged Applicants' claim for foreign priority under 35 USC §119 (a)-(d) or (f), and confirmed the receipt of the required copies of the priority documents by the United States Patent and Trademark Office;
2. Failed to reconfirm that the drawings as filed with this application on 20 June 2003 are accepted – **For the record, Applicants respectfully note that the Examiner accepted the drawings filed with this application in a previous Official Action in this case.**

4. Rejected Claims 1, 4, 7-10, 12-13, 16 and 19-22 under 35 USC §103(a) as being unpatentable over Inoue et al (JP 62-166372) in view of Deguchi, et al. (US 6,061526);
5. Rejected Claims 3, 5-6, 15 and 17-18 under 37 USC §103(a) as being unpatentable over Inoue et al (JP 62-166372) in view of Deguchi, et al. (US 6,061526), as applied to claims 1 and 10 above, and further in view of Ohnishi, et al. (US Patent 6,181,356).
6. Rejected Claim 11 under 35 USC 103(a) as being unpatentable over Inoue et al (JP 62-166372) in view of Deguchi, et al. (US 6,061526), as applied to claims 1 and 10 above, and further in view of Imakawa (US 5,231,280).

No further comment regarding items 1-3 above is deemed to be required in these Remarks.

In addition, with regard to items 5 and 6 above, Applicants respectfully submit that the allowability of the dependent claims 3, 5-6, 11, 15 and 17-18 is determined primarily by the allowability of independent Claims 1 and 10 upon which they respectively depend.

With respect to item 6 above, Applicants note that an important feature of the present invention resides in the fact that the focal adjustment of the optical writing unit is performed by positioning the optical writing unit at a proper distance from, and parallel to, an image-carrying member by modifying the position of the ends of the optical writing unit relative to the image carrying member. Accordingly, a method for focus adjustment in the present invention includes the formation of a test pattern comprising uninterrupted pattern elements disposed generally all along an image forming area in a main scanning direction, said multiple pattern elements being of gradually varying density levels.

Further, the modification of the position of each end of the optical writing unit relative to the image-carrying member is performed according to density levels of the portions of each of the multiple pattern elements on the formed test pattern.

In addition, Applicants now are proposing that Claims 1, 10 and 21 be amended so as to indicate that the test pattern of the invention includes adjustment quantity information showing the amount of adjustment corresponding to the density levels of the multiple pattern elements as heretofore claimed in dependent Claims 7 and 19. Accordingly, it will be understood that in the present invention position adjustment is based on density levels of end portions of each of the multiple pattern elements of the test pattern formed on the printing medium and based upon the adjustment quantity information. The invention as it is proposed to be claimed hereinabove, therefore, further facilitates position adjustments and eliminates any necessity for particular skill in making the position adjustments contemplated. No new matter is inserted into this application by the foregoing amendments, and also no new issues requiring further consideration and/or search are introduced since the subject matter added to the independent claims by the foregoing proposed Amendment was formerly present in dependent claims 7 and 19 heretofore fully searched and considered by the Examiner. Accordingly, since as will be demonstrated below, the combinations of art relied upon by the Examiner fail to establish an appropriate *prima facie* case in support of his outstanding rejections under 35 USC 103(a), Applicants respectfully submit that in the event that the Examiner grants entry to the foregoing Amendment, the Claims of this application will be in condition for allowance as required by 37 CFR 1.116.

More specifically, Applicants have noted previously in this prosecution that it is well established that in order to support a rejection based upon 35 USC 103(a) the Examiner is required to establish a *prima facie* case of the obviousness of the claims at issue to a person of ordinary skill in the art as of the time that the invention thereof was made. Specifically, it is well settled that:

To establish a *prima facie* case of obviousness under Section 103, Title 35 United States Code (35 US §103), three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2D 1438 (Fed. Cir. 1991). Manual of Patent Examining Procedure §2142 (8th Edition), at page 2100-2121, *et seq.*

Applicants again respectfully submit that the Examiner has not established the requisite *prima facie* case in support of his currently outstanding rejections.

In particular, the Examiner in the currently outstanding Official Action has dropped his previous reliance upon the Iannazzi et al reference in combination with the Deguchi et al and Patten et al references as rendering independent Claims 1, 10 and 21 of this application unpatentable under 35 USC 103(a), and has returned to a reliance upon the previously cited Inoue et al reference, now in combination with the Deguchi et al reference (instead of the Nakamura and Patten references) in an attempt to establish the required *prima facie* case in support of the unpatentability of independent Claims 1, 10 and 21.

Applicants respectfully submit that in the course of the currently outstanding rejection the Examiner has misunderstood and mischaracterized the disclosure of the Inoue et al reference in that he has alleged that the Inoue et al reference discloses an adjustment based upon density levels at end portions of each of multiple pattern elements. Applicants cannot agree. Specifically, it is Applicants' understanding of the Inoue et al reference that an operator provides a computer with the coordinates of what he deems to be the best focused elements of respective first and second images formed by the optical writing unit at first and second positions respectively, and further that the computer determines from that information the amounts of adjustment required at the left and right-hand sides of the optical writing unit.

More particularly, as explained previously in this prosecution and discussed in the present specification, the Inoue et al reference supplied to the Examiner by Applicants (along with an English language Abstract, an English language summary and a partial English language translation thereof) discloses the formation of a first image with an optical writing unit held at a specified slant angle with respect to an image carrying member. Based upon the first image so formed, the operator determines the coordinates of the best-focused element of the first image and enters those coordinates into a computer that in turn determines based upon a previously selected conversion subroutine the extent to which the optical writing unit should be raised or lowered to create a focused image. Then, the optical writing unit maintained at the same specified slant angle is moved to a second position parallel to its first position (i.e., upwardly or downwardly relative to its first position) and the computer is provided with sufficient information to determine this change in height relative to the image forming area. Thereafter, the optical writing unit forms a second image, and the operator determines the best-focused element thereof and enters the coordinates of the same into the computer. Finally, the computer determines from the input information the amounts of adjustment of the left and right ends of the optical writing unit required for it to form a focused image on the image forming area.

According to the Examiner's current rejection, however, the Inoue et al reference's disclosure may be characterized as an image exposure device and focusing method including a pattern image forming process for forming a test pattern including multiple pattern elements (Fig. 5) corresponding to pixels arranged along a main scanning direction over an image forming area onto a surface of an image carrying member (10), and a position adjustment process for adjusting the position of the optical writing unit relative to the surface of the image carrying member based on the result of the test pattern. In addition, despite the foregoing, the Examiner also admits that "...Inoue et al fails to teach the test pattern including uninterrupted multiple pattern elements with gradually varying density levels, the position adjustment process being based on the density levels of the multiple pattern elements of the test pattern formed on the printing medium, the test pattern being binary elements the adjustment quantity information denoting the amount of adjustment corresponding to the density levels of the test pattern and an image reader." (See outstanding Official Action at page 4, first full paragraph) In this regard as well, Applicants respectfully submit that it is clear that Inoue et al in no way teaches, discloses or suggests that the test patterns that he creates extend uninterruptedly all along the main scanning direction in the image forming area as specifically claimed in the independent claims of this application. Instead, both of the Inoue et al test patterns mentioned above are formed along the same line extending across the image forming area in the sub-scanning direction.

In recognition of the readily apparent deficiencies of the Inoue et al reference with respect to the present invention, the Examiner cites the Deguchi et al reference. In particular, the Examiner relies upon the Deguchi et al Fig. 19 as showing uninterrupted multiple test patterns arranged along the main scanning direction in combination with the adjustment means shown in Deguchi's Figs. 15A-16. As pointed out previously, however, Applicants respectfully submit that the problem with the Examiner's analysis is that the density measurements represented in the Deguchi Fig. 19 are **not** related to the focus adjustment means depicted in Deguchi's Figs. 15A-16.

Hence, Applicants respectfully submit that it is irrefutably clear from Deguchi at Column 11, lines 24-33 that the pattern depicted in Deguchi's Fig. 19 is related to parallelism among the exposure heads (i.e., whether or not the exposure heads are appropriately disposed parallel to one another so as to prevent measurements being taken in the diagonal direction to the appropriate common parallel direction). The mechanisms depicted in the Deguchi Figs. 15A – 16, on the other hand, are utilized after the parallelism of the exposure heads has been established as a separate operation unrelated to the pattern depicted in the Deguchi Fig. 19.

More specifically, Applicants respectfully submit that the Deguchi reference is concerned with much more than simply focusing at any given intensity level. In other words, Deguchi identifies many more factors that impact upon the final image than the focus here at issue and attempts to provide fixes for all of them.

Accordingly, as discussed at Columns 11 and 12 of the Deguchi reference, one primary factor impacting upon the final image quality is the dispersion of the output of each light-emitting element on the output of the adjacent light emitting elements. Indeed, Applicants respectfully submit that that is what is being dealt with in connection with Deguchi's FIG. 19. Thus, in the scanning direction there is a desire to maintain the same density relationship all across the image. To do this, the light emitting elements have to be aligned parallel to one another and also have to be all pointed in the same direction. FIG 19 of Deguchi et al is demonstrative of what happens when all of the light-emitting elements are activated at the same time and the level of light intensity (i.e., density) is gradually reduced (assuming that the spacing between elements is that which is desired). The optimum spacing is determined by measuring the density across the image so as to locate the peaks associated with the various light sources (see FIG 7).

Thus, Applicants respectfully submit that Fig. 19 of the Deguchi reference is indicative of a read out of the dispersion effects at various intensities such that the alignment of the light emitting elements and the optimal spacing of those elements across the image can be attained. The peaks are located by analysis of the FIG. 19 bands using a density meter focused thereon, but the corrections being made at that stage are not for the purpose of focusing but rather are for the purpose of the equalization of the interactions of the dispersions of light from each element arrayed across the image.

The focusing in Deguchi, on the other hand, is related to FIG 21 (not FIG 20 that shows the fill-in of the spaces between the opposite ends of the light bar so as to maintain the same intensity levels between its ends). Thus, the focus adjustments are based on images like those shown in FIG 21 and the alignment of the light emitting elements across the image is governed by images like FIG 14 instead of FIG 19 that is concerned with parallel emitters parallel to the direction of travel of the recording media.

Applicants respectfully submit, therefore, that Deguchi requires an adjustment of at least one of parallelism (one light emitting element to the other transversely to the media travel direction) or deviation (relative to the parallel relation measured across the travel direction of the recording media) prior to a focus adjustment. Further, Applicants respectfully submit that in Deguchi the focus adjustment depends upon a plurality of lines parallel to the media travel direction arrayed across the image rather than a continuous band from which the desired intensity (density) can be selected for the entire unit to be focused on with respect to the recording media.

Consequently, Applicants respectfully submit that Examiner reads more into the Deguchi reference than is actually there, and also that the Examiner has failed to take into account the limitations of the Deguchi reference that require it to work in the particular manner that it does. In addition, Applicants respectfully submit that when appropriately understood the manner of operation of the Deguchi reference appears to teach away from the present invention instead of suggesting it.

In view of the foregoing, Applicants respectfully submit that the present invention as hereinabove claimed is clearly distinct from the art relied upon by the Examiner in that:

- (i) as currently claimed, the test pattern includes: multiple pattern elements with gradually varying density levels corresponding to different amounts of adjustment for the position of the first and second ends of the optical writing unit; and adjustment quantity information (i.e., the numbers 1 through 9 as depicted beside the pattern elements) showing the amount of adjustment corresponding to the density levels of the multiple pattern elements; and
- (i) the position adjustment process is based on density levels of end portions of each of the multiple pattern elements of the test pattern formed on the printing medium and based on the adjustment quantity information.

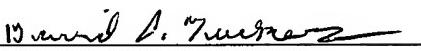
Applicants therefore respectfully submit that the Examiner in the currently outstanding Official Action has improperly built a mosaic of isolated elements of the prior art using the present application as a guide in an attempt to support his rejections under 35 USC 103 (a). Further, Applicants respectfully submit that the Examiner has failed to find all of the elements of the present invention as recited in the present claims in the prior art cited and relied upon, and in addition, that the Examiner has failed to demonstrate that the art itself provides any suggestion for its successful combination in a manner that would lead to the present invention.

In view of the foregoing facts and argument, Applicants respectfully request that the foregoing Amendment be entered, that the Examiner grant reconsideration to this application as so amended, and this application be allowed in response to this communication.

Applicant also believes that additional fees beyond those submitted herewith are not required in connection with the consideration of this response to the currently outstanding Official Action. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. 04-1105, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

Date: August 24, 2006


David A. Tucker
SIGNATURE OF PRACTITIONER

Reg. No.: 27,840

David A. Tucker
(type or print name of practitioner)
Attorney for Applicant(s)

Tel. No. (617) 517-5508

Edwards & Angell, LLP
P.O. Box 55874
P.O. Address

Customer No.: 21874

Boston, MA 02205